

## MULTICHANNEL ELECTROCHEMICAL ANALYZERS

Electrochemical (EC) detection has numerous advantages over optical detection, including very low detection limits (down to pg/mL), analysis of turbid or colored samples, simplicity of detection system, compatibility with high-speed micro fabrication and ability to miniaturize all device components. Therefore, electrochemical detection is particularly well-suited for low-cost, point-of-care quantification of biomarkers in blood, serum, saliva and urine. The first product to be released in SFC Fluidics' line of electrochemical products is the EC-Reader™ (Figure 1). EC-Reader™ is a handheld (light weight) potentiostat with the ability to simultaneously record electrochemical data from up to 24 channels in less than 30 seconds. For streamlined life science research, this instrument can interface with a wide range of microelectrochemical array assay cartridges that have been functionalized for various applications

as defined by the customer. EC-Reader™ has been specifically designed for:

- Simultaneous analysis of multiple biomarkers in the same sample
- Multiplexed detection of the same biomarker in multiple samples
- Biomedical applications that require rapid and sensitive analysis
- Sensitive detection of proteins at asymptomatic stages of disease
- Escalating needs of Homeland Security and Department of Defense

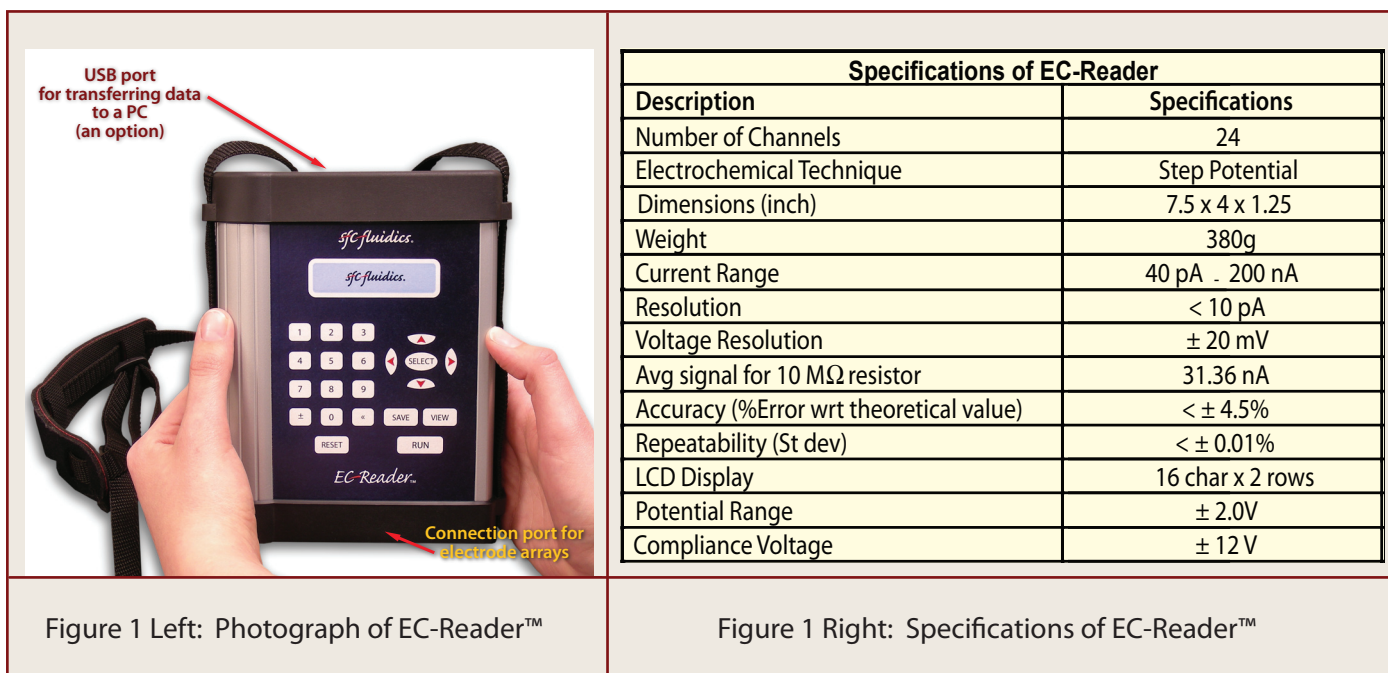


Figure 1 Left: Photograph of EC-Reader™

Figure 1 Right: Specifications of EC-Reader™

Soon after the release of EC-Reader™, Microelectrochemical Array (MECA™), a platform sensor technology in advanced stages of development, will be commercially launched. MECA™ will combine all the advantages of electrochemical detection into a microscale format that can be readily incorporated into point-of-care diagnostics. MECA™ sensor chips consist of 50 µm cavities with three metal layers (Figure 2 top) that can be used for self-contained electrochemistry. As published in Wansapura 2010, the ability of MECA™ to detect prion protein in brain homogenate at a 1:100,000 dilution is shown in Figure 2 (bottom).

## Advantages of the MECA technology:

- Individually addressable microelectrodes in a microarray format.
- Microelectrodes as small as 8 µm<sup>2</sup> and reagent volumes as low as 100 nL.
- Potential for use as a self-contained immunoassay/DNA assay capture and detection platform.
- Rapid and sensitive (low LODs) detection due to the close proximity between the detecting electrode and analyte capture surface.
- Eliminates dilution of reporter species due to the small volume of cavity.
- Ease of miniaturization of electrochemical detector leading to inexpensive, portable, lightweight equipment.
- Potential for single-use, disposable microarray assay chips to avoid cross contamination.
- Potential for high throughput analysis of multiple samples.

**Reference:** Wansapura, C. M. 2010. "Self-contained Microelectrochemical Assay with Enhanced Capture Surface for Sensitive Detection of Proteins." ECS Trans. 33: 161-167.

## Contact Information:

For further technical assistance and purchasing information, contact

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